UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCK. T NO.	CONFIRMATION NO.
09/832,920	04/12/2001	Takakazu Tanaka	35.G2771	5232

5514 7590 11/10/2003

FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
DOTE, JANIS L	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 11/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/832,420	TANAKA et al
Examiner	**Group Art Unit**
J. DOTE	1756

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 6/5/03; 9/30/03.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 21-34 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 21-34 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☒ All ☐ Some* ☐ None of the:

☒ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other _____

Office Action Summary

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on Jun. 5, 2003, has been entered.

2. The examiner acknowledges the amendments to claims 21, 22, 24, 25, 29, and 30, filed in Paper No. 9 on May 2, 2003, which was entered on the filing of the RCE. The examiner further acknowledges the amendment to claims 21 and 22 and the addition of new claims 33 and 34, filed in Paper No. 16 on Sep. 20, 2003. Claims 21-34 are pending.

3. The examiner acknowledges applicants' filing of the Rule 132 declaration, executed by Takakazu Tanaka on Apr. 25, 2003, filed in Paper No. 11 on May 2, 2003. The declarant states that laser beam printer LBP-950, used in the examples in the specification, "employs a contact charger and not a corona charger."

4. The objection to the specification under 35 U.S.C. 132, set forth in the office action mailed on Dec. 2, 2002, Paper No. 8,

paragraph 3, has been withdrawn in response to the replacement paragraph beginning at page 8, line 15, of the specification, filed in Paper No. 9.

The objection to the specification set forth in Paper No. 8, paragraph 4, has been withdrawn in response to the replacement paragraph beginning at page 14, line 25, of the specification, filed in Paper No. 9.

The rejections of claims 21-32 under 35 U.S.C. 112, second paragraph, set forth in Paper No. 8, paragraph 6, have been withdrawn in response to the amendments to claims 24, 25, 29, and 30, filed in Paper No. 9, and applicants' comments in Paper No. 9. Applicants state that the term "triphenylamine compound" recited in instant claims 21 and 22 is "an amine group bonded to three phenyl moieties. The amine nitrogen atoms in compounds (CT-6) and (CT-8) . . . are bonded to three phenyl moieties. One phenyl moiety is part of a fluorenyl group. A fluorenyl group is a type of fused phenyl moiety." Paper No. 9, page 11, lines 16-21.

The objection to claim 21 set forth in Paper No. 8, paragraph 7, has been withdrawn in response to the amendments to claim 21 filed in Paper No. 9.

The rejection of claims 21-32 under 35 U.S.C. 103(a) over US 5,430,526 (Ohkubo) combined with US 4,859,556 (Sasaki) and Diamond, Handbook of Imaging Materials, page 395, set forth in

Paper No. 8, paragraph 10, has been withdrawn in response to the amendment to claims 21 and 22 filed in Paper No. 16, deleting the arylamine compound of formula (CT-9). Neither reference teaches or suggests a photosensitive member comprising a charge transfer material represented by formulas (CT-1), (CT-3), (CT-5), or (CT-8), as recited in amended claims 21 and 22 filed in Paper No. 16.

The rejections of claims 21-32 under 35 U.S.C. 103(a) over Ohkubo combined with US 6,242,648 B1 (Yamasaki), as set forth in Paper No. 8, paragraphs 11 and 12, have been withdrawn in response to the amendments to claims 21 and 22, deleting the arylamine compound of formula (CT-11). See the amendments to claims 21 and 22 in Paper No. 9. Neither reference teaches or suggests a photosensitive member comprising a charge transfer material represented by formulas (CT-1), (CT-3), (CT-5), or (CT-8), as recited in amended claims 21 and 22 filed in Paper No. 16.

The rejection of claims 21-32 under 35 U.S.C. 103(a) over Ohkubo combined with US 5,098,809 (Kikuchi), as set forth in Paper No. 8, paragraph 13, has been withdrawn in response to the amendments to claims 21 and 22, filed in Paper No. 16, deleting the arylamine compound of formula (CT-6). Neither reference teaches or suggests a photosensitive member comprising a charge transfer material represented by formulas (CT-1), (CT-3), (CT-5),

or (CT-8), as recited in amended claims 21 and 22 filed in Paper No. 16.

5. The examiner notes that the following terms are means-plus-function limitations covered by the 35 U.S.C. 112, sixth paragraph: "exposure means," "contact charging means," "developing means," and "transfer means" recited in instant claims 21, 22, 33, and 34. No structure for the terms are recited in the claims. The only definitions for the "exposure means," "developing means," and "transfer means" are provided by instant Fig. 1. The instant specification defines "contact charging means" as a charge roller. See the instant specification at page 19, lines 16-18, and Fig. 1, reference sign **3**, which discloses "a contact charging means using a charge roller."

6. The examiner has interpreted that the term $Pd(OAc)_2$ recited in instant claims 33 and 34 as palladium (II) acetate. The instant specification at page 12, line 9, discloses that the palladium compound can be palladium (II) acetate. The term "Ac" can be used as an abbreviation for acetyl (i.e., CH_3CO-). See Grant & Hackh's Chemical Dictionary, page 4. If applicants do not agree with the examiner's definition of the term "$Pd(OAc)_2$",

they should clearly state so, and show where there is antecedent basis in the specification for their definition.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 33 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 33 and 34 are indefinite in the phrase "the phosphine compound is . . . " the compound (P-10), because the compound is outside the scope of the previously recited formula (1), which requires "at least one of Ar^1 to Ar^3 [the three groups bonded to the phosphorus atom in formula (1)] is a tert-butyl group." In compound (P-10), the phosphorus atom is not bonded to a tert-butyl group, but to two n-butyl groups.

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. Claims 21-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,430,526 (Ohkubo) combined with US 5,723,671 (Goodbrand) and applicants' admission that "it is known that the variation of the rest potential is greatly affected by the impurities in the charge transfer material" at page 2, lines 23-25, of the instant specification.

Ohkubo discloses an electrophotographic image forming apparatus comprising all the components recited in instant claims 22 and 34, but for the particular photosensitive member. Fig. 1 and col. 2, line 56, to col. 3, line 56. Ohkubo also discloses a process cartridge which comprises all the components recited in instant claims 21 and 33, but for the particular photosensitive member. Fig. 2 and col. 3, line 65, to col. 4, line 8. Ohkubo discloses that the charging member is a contact charging roller as recited in the instant claims. An oscillating voltage is applied to the charging roller in the form of a DC-biased AC voltage. The peak-to-peak voltage of the oscillating voltage is not less than twice the absolute value of a "charge starting voltage" relative to the photosensitive member. Said oscillating voltage provides uniform charging. Ohkubo discloses that "uneven charging hardly occurs in a regular developer or a reverse development process." Col. 1, lines 36-42, col. 3, line 64, to col. 4, line 5, col. 4, lines 9-17.

Ohkubo does not disclose the use of the photosensitive member recited in the instant claims. However, Ohkubo does not limit the type of photosensitive member used. Col. 4, lines 29-35.

Goodbrand discloses a process for making the charge transport triarylamine compound, N,N-bis(3,4-dimethylphenyl)-4-biphenylamine. Example 1 at col. 10. The triarylamine has the identical chemical formula as compound CT-5 recited in instant claims 21, 22, 33, and 34. Goodbrand's triarylamine compound has a purity of 99.8 percent. Col. 10, line 48. Goodbrand teaches that its triarylamine compound may be incorporated in a photosensitive layer comprising a charge generation layer that comprises a charge generating material and a charge transport layer comprising Goodbrand's triarylamine compound. Col. 7, lines 41-65. Goodbrand discloses that prior art processes, such as the Ullmann condensation using non-ligand cuprous oxide catalysts, provide crude charge transport molecules of lower quality and purity than the charge transport molecules obtained by Goodbrand's process. Col. 2, lines 22-30. Goodbrand discloses that its process makes the charge transport compound N,N-bis(3,4-dimethylphenyl)-4-biphenylamine in a "high state of purity enabling it to be readily further purified if needed to electronic grade purity" for use as charge transporting molecules in layered photoconductive imaging members. Col. 2, lines 30-35,

and col. 3, lines 27-29. As admitted by applicants in the instant specification, "it is known that the variation of the rest potential [of the photosensitive member] is greatly affected by the impurities in the charge transfer material." See the instant specification, page 2, lines 23-25.

Instant claims 21-34 are written in product-by-process format. These claims recite that the charge transfer triphenylamine compound is obtained by reacting an amine compound with an aryl halide in the presence of the base (claims 23 and 28) and a catalyst comprising a palladium compound and a particular phosphine compound. Goodbrand does not make its triarylamine compound by such a method. However, as discussed supra, Goodbrand's triarylamine compound has the identical chemical formula as compound CT-5 recited in instant claims 21, 22, 33, and 34. Furthermore, Goodbrand's compound is used for the same purpose as compound CT-5, namely to transport charge in an electrophotographic photosensitive member. Accordingly, it appears that the triarylamine compound made by the method disclosed in Goodbrand's example 1 is the same or substantially the same as the instantly recited triarylamine compound CT-5 made by the method using the particular phosphine compounds recited in the instant claims. The burden is on applicants to prove otherwise. In re Marosi, 218 USPQ 289 (Fed. Cir. 1983); In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985); MPEP 2113.

It would have been obvious for a person having ordinary skill in the art to use the layered photosensitive layer disclosed by Goodbrand comprising Goodbrand's triarylamine as the charge transport material in the charge transport layer as the photosensitive layer on the conductive support in the apparatus and process cartridge disclosed by Ohkubo, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic apparatus and process cartridge that are capable of being used in an electrophotographic process to provide image copies.

11. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo combined with US 5,098,809 (Kikuchi).

Ohkubo discloses an electrophotographic image forming apparatus comprising all the components recited in instant claim 34, but for the particular photosensitive member. Ohkubo also discloses a process cartridge which comprises all the components recited in instant claim 33, but for the particular photosensitive member. The discussion of Ohkubo in paragraph 10 above is incorporated herein by reference.

Although Ohkubo does not disclose the use of the photosensitive member recited in the instant claims, Ohkubo does

not limit the type of photosensitive member used. Col. 4, lines 29-35.

Kikuchi discloses an electrophotographic photosensitive member comprising a conductive support having thereon a photosensitive layer comprising a charge generation material and the charge transfer triarylamine compound (19). Col. 6, lines 25-30; col. 16, lines 14-38; and Table 4, example 17. Kikuchi's compound (19) has the identical chemical formula as compound CT-6 recited in instant claims 33 and 34. Kikuchi further discloses that the conductive support in the photosensitive member can be in the shape of a drum. Col. 8, lines 37-38. Kikuchi discloses that its photosensitive member has high sensitivity and is capable of stably retaining potential during repeated use. Col. 2, lines 21-24. Kikuchi also discloses that its photosensitive member can be used in an electrophotographic apparatus, and does not limit the type of apparatus. Col. 9, lines 62-68.

Instant claims 33 and 34 are written in product-by-process format. These claims recite that the charge transfer triarylamine compound is obtained by reacting an amine compound with an aryl halide in the presence of a catalyst comprising a particular palladium compound and a particular phosphine compound. Kikuchi does not disclose that his triarylamine compound (19) is obtained by such a method. Kikuchi, col. 7,

lines 29-42. However, as discussed above, Kikuchi's triphenylamine compound (19) has the identical chemical formula as compound CT-6 recited in the instant claims. Furthermore, Kikuchi's compound (19) is used for the same purpose as compound CT-6, namely to transport charge in an electrophotographic photosensitive member. Moreover, the instant specification discloses that when the charge transfer triarylamine compound is made by the method recited in instant claim 1, the photosensitive member comprising the resulting charge transfer compound exhibits an endurance stability. The discussion of the instant specification in paragraph 8 above is incorporated herein by reference. As discussed above, Kikuchi also discloses that his electrophotographic photosensitive member comprising the charge transfer triarylamine compound (19) has excellent durability to the repetition of the image forming process. Col. 2, lines 20-24, and Table 4, example 19. Table 4 reports that after 10,000 successive image formation cycles, the variation in the dark potential and light potential were +8 V and -27 V, respectively. (From the results reported in Tables 1 and 4 in Kikuchi, it appears that the choice of charge generating material results in the variation in light potential. For example, the photosensitive members in example 1 in Table 1 and example 14 in Table 4 have the same composition, but for the charge generation layer. The charge generation layer in

example 1 comprises a particular diazo pigment, while the layer in example 14 comprises a dibromoanthanthrone. After 10,000 successive image formation cycles, the variation in the dark potential and light potential for the photosensitive member in example 1 were +3V and -4 V, respectively, while the variations in potentials for the photosensitive member in example 14 were +6 V and -12 V, respectively.) Accordingly, it appears that Kikuchi's triarylamine compound (19) is the same or substantially the same as the instantly recited triarylamine compound made by the method recited in instant claims 21-38. The burden is on applicants to prove otherwise. Marosi, supra; Thorpe, supra; MPEP 2113.

It would have been obvious for a person having ordinary skill in the art to use Kikuchi's photosensitive member as the photosensitive member in the apparatus and process cartridge disclosed by Ohkubo, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic apparatus and process cartridge member has high sensitivity and is capable of stably retaining potential during repeated use.

12. Applicants' arguments filed in Paper No. 9 with respect to the rejections set forth in paragraph 11 above have been fully considered but they are not persuasive.

Applicants assert the combined teachings of the prior art do not render the instantly claimed process cartridge and apparatus prima facie obvious because there is no motivation to combine Ohkubo with Kikuchi. Applicants assert that Kikuchi is non-analogous art to the current invention and Ohkubo because: it does not relate to contact charging; and Ohkubo is classified in a different class than Kikuchi. Applicants argue further that Kikuchi only discloses corona charging and that there is no reason to believe that "whatever success" their respective triarylamine compounds had in corona charging are transferable to a contact charging environment. Applicants also argue that Kikuchi's triarylamine compound is not obtained by the process steps recited in the instant claims and therefore the reference fails to meet all the limitations recited in the instant claims.

Applicants' arguments are not persuasive for the following reasons:

1) Kikuchi and Ohkubo are both directed to the same field of endeavor, the art of electrophotography. Kikuchi discloses an electrophotographic photosensitive member for use in electrophotographic processes and apparatuses. Ohkubo's process cartridge and apparatus comprise an electrophotographic photosensitive member. Furthermore, although contact charging differs from corona charging, they are both utilized in an electrophotographic imaging process to provide the same result, namely to uniformly charge the electrophotographic photosensitive

member to a predetermined polarity. Accordingly, Kikuchi is not non-analogous art to Ohkubo, under either of the tests set out in In re Clay, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992).

2) As discussed in the rejection in paragraph 11 above, Ohkubo teaches an apparatus and process cartridge that comprises all the other components (including a contact charger) recited in instant claims 33 and 34, but for the particular photosensitive member. Ohkubo does not limit the type of electrophotographic photosensitive member used in its apparatus. Kikuchi does not limit the type of electrophotographic apparatus used. Kikuchi provides reason, motivation, and suggestion to a person having ordinary skill in the art to use its photosensitive member in the process cartridge or apparatus disclosed by Ohkubo. In particular, Kikuchi discloses that its photosensitive member has high sensitivity and is capable of stably retaining potential during repeated use.

3) Applicants have not provided any evidence to show that Kikuchi's electrophotographic photosensitive members would not provide electrostatic latent images when used as the photosensitive member in the process cartridge and apparatus disclosed by Ohkubo. Nor have applicants provided any evidence to show that the advantages of Kikuchi's photosensitive member, for example, high photosensitivity, would not be achieved when used in Ohkubo's process cartridge and apparatus.

4a) As discussed in the rejection, the triarylamine compound recited in the instant claims is described in product-by-process language. Kikuchi's compound (19) has an identical chemical formula as compound CT-6 recited in instant claims 33 and 34, respectively. The prior art compound is used for the same purpose as compound CT-6, namely to transport charge in an electrophotographic photosensitive member. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." MPEP 2113 (8th edition, Rev. 1, Feb. 2003), citing In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Feb. Cir. 1985).

4b) Furthermore, instant specification does not disclose that the triarylamine compound made by the process recited in the instant claims exhibit "endurance stability" only upon exposure to contact charging. See the instant specification at page 19, lines 16-17, which discloses that "[w]hen the primary charging means 3 is a contact charge means using a charge roller, preexposure is not always necessary." Clearly, the specification does not limit the use of its triarylamine compounds to

apparatuses comprising a contact charge means. Nor have applicants pointed to any evidence of record that the prior art considers such compounds to be limited to apparatus comprising a particular charging means.

Thus, for the reasons set forth above and in the rejection, the combined teachings of Ohkubo and Kikuchi render obvious the process cartridge and apparatus recited in instant claims 33 and 34.

4c) Moreover, the showing in the instant specification fails to show that Kikuchi's triphenylamine compound is not the same or substantially the same as the triphenylamine compounds made by the method recited in the instant claims for the following reasons:

First, the showing in the instant specification is not commensurate in scope with the instant claims. The triphenylamine compound CT-6 is made by a particular method which uses a particular base, sodium tert-butoxide, and a particular phosphine compound, compound (P-8), which contains a di-tert-butyl-substituted phosphine group, and a particular palladium compound, $PdCl_2$. Instant claims 33 and 34 recite that compound CT-6 is synthesized from an amine compound and an aryl halide in the presence of a phosphine compound selected from a Markush group of 7 compounds, which includes compound (P-8) and phosphine compounds (P-10 and (P-15), which do not contain a di-tert-butyl-

substituted phosphine group, and a palladium compound selected from $Pd(OAc)_2$, $PdCl_2$, or tris(dibenzylidenacetone)di-palladium(0). Instant claims 33 and 34 do not recite the presence of a base in forming triphenylamine compound (CT-6). There is no objective evidence on the present record to show that triphenylamine compound CT-6 obtained by the method recited broadly in instant claims 33 and 34 is non-obviously different from the triphenylamine compound disclosed in the prior art.

Accordingly, the rejection over Kikuchi stands.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (703) 308-3625. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (703) 308-2464. The central fax phone number is (703) 872-9306.

Any inquiry of papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Palestine Jenkins, whose telephone number is (703) 308-3521.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JANIS L. DOTE
PRIMARY EXAMINER
GROUP ~~1500~~ 1700

JLD
November 6, 2003